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ABSTRACT

About 960,000 U.S. civilian employees have received about 45 million hours of training, costing the Federal Government about $216 million. To find out how the Civil Service Commission and the Federal Executive department measured the effectiveness of this training, fulfilled the evaluation requirements of the Government Employees Training Act of 1958, and progressed in implementing the recommendations of a 1967 congressional subcommittee report which concluded that Federal training was not evaluated as required, the Government Accounting Office sent questionnaires to about 900 Federal Executive department training and employee development officers and consulted with Commission officals and training evaluation authorities. The questionnaire results showed that the evaluation requirements of the Government Employees Training Act, the Executive order supplementing the law, and the subcommittee recommendations are not being met adequately. Specific findings and recommendations are given. The survey instruments are also included. (RC)

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REPORT TO THE CONGRESS

BY THE COMPTROLLER GENERAL OF THE UNITED STATES

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Better Evaluation Needed For Federal Civilian Employee Training

Federal Executive Departments

Civil Service Commission

Under the Government Employees Training Act, each Federal department and agency head has responsibility for training civilian employees within that department or agency. Each agency head is required to plan, program, budget, operate, and evaluate training programs.

This report should help the Congress assess how well the Civil Service Commission and the departments and agencies are fulfilling the evaluation requirements of the Government Employees Training Act, the Executive order supplementing the act, and the 1967 recommendations of the Subcommittee on Manpower and Civil Service of the House Committee on Post Office and Civil Service.

TM005 080

FPCD-75-120

AUG. 12. 1975

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-70896

To the President of the Senate and the
Speaker of the House of Representatives

This is our report on improvements needed in training evaluation. It should help the Congress assess how well the Civil Service Commission and the Federal departments and agencies are fulfilling the evaluation requirements of the Government Employees Training Act, Executive Order 11348 and recommendations of a 1967 report by the Subcommittee on Manpower and Civil Service, House Committee on Post Office and Civil Service.

We made our review pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

We are sending copies of this report to the Director, Office of Management and Budget, to the Chairman, Civil Service Commission, and to the Federal departments included in our review.

Comptroller General
of the United States

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ABBREVIATIONS

CSC	Civil Service Commission
GAO	General Accounting Office
GETA	Government Employees Training Act
DOD	Department of Defense
FPM	Federal Personnel Manual
TCM	Training Cost Model
TVM I	Training Value Model I

COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

BETTER EVALUATION NEEDED FOR FEDERAL CIVILIAN EMPLOYEE TRAINING

Federal Executive Departments
Civil Service Commission

D I G E S T

About 960,000 U.S. civilian employees have received about 45 million hours of training, costing the Federal Government approximately $216 million. How have the Civil Service Commission and the Federal Executive departments

--Measured the effectiveness of this training?

--Fulfilled the evaluation requirements of the Government Employees Training Act of 1958?

--Progressed in implementing the recommendations of a 1967 congressional subcommittee report which concluded that Federal training was not evaluated as required?

To answer these questions, GAO sent questionnaires to about 900 Federal Executive department training and employee development officers and consulted with Commission officials and training evaluation authorities.

The questionnaire results show that the evaluation requirements of the Government Employees Training Act, the Executive order supplementing the law, and the subcommittee recommendations are not being met adequately.

The extent and degree to which training cost data was collected varied widely, with many respondents not gathering enough data for effective cost control.

(See p. 10.)

Tear Sheet. Upon removal, the report cover date should be noted hereon.

GAO recommends that the Commission define and achieve a consensus among the Executive departments and agencies on the elements that make up the total cost of training and then insure that data on these elements is uniformly determined and collected.

There was little use of the Commission's Training Cost Model, developed in 1972 for making specific cost forecasts for training operations. (See p. 11.)

GAO recommends that the Commission determine why the cost model has been little used, amend and refine it accordingly, and then increase efforts to publicize it to training officials at all levels.

Although almost all respondents reported that they had written training course plans, the plans often lacked the specific features necessary for effective future course evaluation. (See p. 14.)

GAO recommends that the Commission help the departments and agencies develop written training course plans which include instructions for course delivery, measuring course results, and modifying and updating the course before future use.

Some performance measures were taken during the course, some on its completion, and some after the trainee's return to the job. The extent, detail, timing, and scope of the measures used varied widely. In many cases the use of measures was so limited that effective evaluation was impossible. (See p. 17.)

While many respondents said that performance was assessed upon return to the job (probably the most crucial step because it

demonstrates the adequacy and relevancy of the course), the type, timing, and depth of this assessment often fell short of standards suggested by training authorities. (See p. 17.)

Statistical and experimental evaluations were not widely conducted; those that were done were elementary. However, over 60 percent of the respondents said they were satisfied with the level of evaluations performed. (See p. 26.)

Respondents' comments indicated that problems with training were widespread among departments, regardless of the size or scope of the training officers' responsibilities. Most respondents who were dissatisfied with the level of evaluations lacked resources. Others lacked statistical and experimental know-how, and some mentioned lack of management interest. In addition, respondents stressed lack of management support and difficulties with selection for training. (See p. 25.)

GAO recommends that the Commission reemphasize that it is the departments' and agencies' primary responsibility to control the training of their employees and to evaluate the effectiveness of that training. GAO also recommends that the Commission promote successful evaluation methods among the agencies and, through its personnel management evaluation function, monitor the agencies' evaluations of training.

The Commission found the GAO survey data disheartening but said that, unfortunately, it confirmed the Commission's suspicions. The Commission added, "Hopefully, the report will lead to the formulation and implementation of specific action recommendations."

To fullfill its role in providing training leadership and guidance, GAO recommends that the Commission work with Federal departments and agencies on the findings and problems identified in this report and determine steps to be taken for improvements.

CHAPTER 1

INTRODUCTION

The basic statute authorizing employee training throughout most of the Federal Government is title 5, United States Code, chapter 41 (5 U.S.C. 4101 et seq. (1970)). Executive Order 11348 of April 20, 1967, gives agency heads additional direction on how to use the general statutory authority. Both the law and the Executive order authorize the Civil Service Commission (CSC) to issue regulations governing various aspects of the law.

According to the Government Employees Training Act (GETA), Public Law 85-507, July 7, 1958 (now 5 U.S.C. 4101 et seq. (1970)), each department and agency head has the primary responsibility for conducting training within that department or agency. The above mentioned Executive order requires each agency head to plan, program, budget, operate, and evaluate training programs. The specific responsibilities placed on department and agency heads by the law and regulations include:

--Determining the department's training needs.

--Establishing and operating training programs to meet those needs.

--Establishing the criteria for the selection of employees for training.

--Determining the method and extent to which the department will finance training.

--Evaluating the results of training.

--Reporting to CSC on training activities.

Under GETA and the Executive order, CSC is responsible for providing leadership and guidance to Federal training activities. Through its Bureau of Training, CSC:

--Plans and promotes the development, improvement, coordination, and evaluation of training activities under the law.

--Assists agencies in the development of sound programs and financial plans for training, with particular attention to planning, programing, budgeting, operating, evaluating, and improving training programs.

--Provides for identifying and disseminating findings of research in training technology.

--Issues Government-wide training regulations.

SIZE AND COST OF FEDERAL CIVILIAN TRAINING PROGRAMS

In fiscal year 1973, about 960,000 civilian employees received a total of almost 45 million hours of training costing approximately $216 million.[1] (This does not include trainees' salaries, which are not reported to CSC. If estimated salaries were included, total training cost would be approximately $500 million.) Agencies report employee training under four general categories:

	Approximate number trained
-- Medical, scientific, legal, engineering and related fields (professional).	150,000
-- Trades and crafts, facilities and services, and "how to" courses in administrative techniques and skills (technical).	391,000
-- Administration, management, and supervision (administrative).	211,000
-- Clerical and office services, orientation, safety and health, and communications (other).	207,000
Total	959,000

[1]Fiscal year figures are the latest available from CSC at the time of our writing--April 1975.

Most trainees (71 percent) attended courses provided by their own agencies. The remainder attended interagency or non-Government courses.

The total (approximate) cost of this training in fiscal year 1973 was:

Tuition and fees	$ 32,000,000
Travel and per diem	52,000,000
Books, materials, and other related costs	17,000,000
Salaries of persons engaged in employee development and training	115,000,000
Estimated salaries of training participants	295,000,000
Total	$511,000,000

REPORT OF SUBCOMMITTEE ON MANPOWER AND CIVIL SERVICE OF HOUSE POST OFFICE AND CIVIL SERVICE COMMITTEE

In 1967 the Subcommittee studied the effectiveness of the implementation of GETA. To determine the extent to which training was evaluated, the staff visited field offices and met with training representatives at various department and agency headquarters.

In their report, they suggested that:

"* * * evaluation of training should logically begin with the determination of a legitimate need for training in the first instance. * * * then alternative methods, and their estimated alternative costs should be evaluated. * * * Next consideration should be given to evaluation of the training itself. * * * The evaluation step following this would be a determination of the employee's performance on the job after training as related to his performance prior to the training."

The report concluded that most departments and agencies apparently had no adequate training evaluation process which effectively encompassed all the evaluation areas suggested above.

Additionally the report said:

> "Evaluation is the one area of training programs that has probably suffered more than any other. Training needs have not always been properly evaluated. Methods of accomplishing training properly have not always been properly evaluated in light of the training need. Training courses themselves have not always been properly evaluated as to the specific objectives desired by the manager sending employees to these courses. Employees' performance on the job is not being properly evaluated in terms of the training which the employee has received, presumably to improve this performance."

The Subcommittee agreed that evaluating training is a complex problem. "However," it added:

> "The fact that it is complex is no excuse for not making a reasonable effort to evaluate whether or not the Government is getting a dollar's worth of end product for each dollar it spends on training its employees."

The report recommended that:

--Departments and agencies give concerted attention to developing training evaluation programs which cover all phases of training from training requirements to employee performance after training.

--CSC take leadership in developing more definitive guides for training evaluation and help the departments and agencies implement these guides.

1971 REPORT ON TRAINING

On May 25, 1971, we issued a report (B-70896) to the Congress on improvements needed in the management of training

under GETA in the Department of Defense (DOD). In response to this report, which identified the same weaknesses in accounting for training costs and making evaluations as the 1967 Subcommittee report, CSC said:

> "As outlined in previous correspondence with GAO, the Commission has begun to fulfill its role in the planning and management of training areas and is acquiring the knowledge and technical skills necessary to serve in a consultative and advisory capacity to Federal agencies. In addition, the Bureau of Personnel Management Evaluation, in its review of agency personnel functions, now examines such areas as the responsiveness of training to mission needs, the responsibility for training to mission needs, the responsibility for training need determination, development of schedules and priorities, equal training opportunity for minority groups and women, counseling for self-development and advancement, management attitudes toward training, and training evaluation".

METHODOLOGY FOR GAO REVIEW

To examine the progress made in implementing the recommendations of both the 1967 Subcommittee report and our 1971 report and the current state of training evaluation, we sent a questionnaire (see app. I) to randomly selected training and employee development officers throughout the Federal Executive departments.[1] These departments accounted for about 82 percent of the Federal employees who received training in fiscal year 1973.

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[1] "Executive departments," as used in this report and as defined in the United States Government Organization Manual 1973-74, include the Departments of Agriculture; Commerce; Defense (including the Air Force, Army, Navy, and other Defense agencies); Health, Education, and Welfare; Housing and Urban Development; the Interior; Justice; Labor; State; Transportation; and the Treasury.

Our sampling procedures were planned so that reporting could be analyzed by department and overall. In preliminary analyses we found few significant departmental differences and are therefore reporting our overall findings.[2]

Overall, the responses contained information on approximately 300 courses.[3] We asked respondents to answer the questionnaire for the course for which they are responsible (excluding correspondence courses, CSC training, and long-term non-Government courses) which received the most effective evaluation. Because the results represent what the respondents believe to be their best evaluated courses, their other courses must receive the same level of evaluation, less thorough evaluation, or no evaluation.

The questionnaire was constructed after a review of Federal training regulations and requirements, a review of training literature, and discussions with training authorities. It was designed to learn the extent to which training and employee development officers (1) identify training course costs, (2) plan, review, and revise training courses, (3) assess and evaluate the effectiveness and benefits of training, and (4) have problems with training and its evaluation.

We discussed the survey results with Bureau of Training officials and have incorporated their comments where applicable.

Our conclusions and recommendations are in chapter 6.

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[2] In this report, "significant difference" refers to statistically significant differences determined by use of the Z test at the 95-percent confidence level. See appendix III for a description of this test.

[3] See appendix II for sampling procedures.

SCOPE OF REVIEW

The questionnaire was sent to 881 randomly selected training and employee development officers from all Federal Executive departments. Discussions were also held with CSC officials and with authorities in training evaluation.

CHAPTER 2

COSTS OF TRAINING

The 1967 House Subcommittee reported that most Federal departments and agencies apparently did not have adequate systems for determining and reporting accurate training costs. The report recommended that:

> "Departments and agencies should consider establishing better systems for keeping cost records of training programs. This should probably be incorporated into existing cost accounting systems. The Civil Service Commission should coordinate the program to assure uniformity and comparability."

CSC said, in response to our 1971 report, that:

> "The major deficiencies cited in this report deal primarily with the absence of adequate financial management systems for training in the DOD activities audited. Unfortunately this problem is not unique to DOD--most Federal agencies have this same problem. We feel that the reasons why this is so are worth some discussion. Large scale training of Federal employees is still relatively new in the Government and expenditures for such training have grown over the past decade. Training management systems have not kept pace with this growth for a host of reasons, e.g., higher agency priorities, lack of systematic analysis, manpower and budget limitations, and lack of top management concern." (Underscoring supplied.)

CSC also said that it did not believe it would be practical for DOD or any large Federal organization to require that training cost items be identified in accounting systems but that it would be possible for agencies to develop analytically derived and periodically adjusted cost estimates which would be adequate for training management purposes.

The Federal Personnel Manual (FPM) says that, where feasible, agencies should use available analytical tools to compare the costs of various training solutions and the values to be derived from them.

The use of cost data for evaluating training is also addressed in the Bureau of Training's May 1971 pamphlet entitled "Training Evaluation: A Guide to its Planning, Development and Use in Agency Training Courses." This

pamphlet suggests that, in general, the more costly the course, the more comprehensive its evaluation ought to be.

Recognizing the necessity of gathering costs as an important first tool in assessing training, in fiscal year 1972 CSC developed the Training Cost Model (TCM) which is:

> "* * * a simulation model for agency training management use in making specific cost forecasts with respect to training operations. Its potential applications range from permitting agencies to make accurate performance-linked budget inputs for the training function to developing estimates of the cost of a proposed training course."

CSC believes the most significant use of all may be:

> "* * *for providing a sound basis for including training as a positive element in an agency's strategic planning. That is, as agencies look forward in time anticipating the very substantial changes that are inevitable, it permits them to cost out training as one significant potential change factor; to cost out the implications of any strategic decisions that involve training or training for change; and to include that thinking in a very positive and concrete way in planning for agency resource allocation over the coming years."

Despite the complex concepts underlying TCM, CSC claims that its actual operation is simple and that, once the required basic assumptions are laid out, the calculations can be made by clerical staff or can be computer programed.

TCM calls for identifying each of the following important cost elements:

--Total direct labor costs for staff associated with training.

--Tuition.

--Trainee salary costs.

--Travel and per diem.

--Other expenditures (books, materials, contractors, rentals, and related costs).

We examined the extent to which the Executive departments accounted for the above cost elements and used TCM.

ACCOUNTING FOR TRAINING COURSE COSTS

Although some respondents made no accounting of training costs because "the cost of training would appear prohibitive" or "management does not seem to care," 77 percent did some accounting. Of these, some explained that they would have no reason to collect travel or per diem costs if the course on which they were reporting was taught at the work site or they would not always collect tuition and fees from their bureaus or divisions for courses which they sponsored internally but, rather, would include such costs in their training office overall budget.

Specific costs were accounted for as follows.

	Percent of respondents (note a)
Direct labor costs for staff associated with training	67
Trainee salary costs (note b)	60
Tuition and fees	61
Travel and per diem	78
Other expenditures (books, materials, contractors, rentals, etc.)	82
Total costs	81

[a]"Respondents" refers to the 77 percent who accounted for training course costs.

[b]Constituted about 58 percent of the total amount spent by the Federal Government on training in fiscal year 1973.

Other differences surfaced as to what constitutes total cost. Eighty-one percent of the respondents indicated that they accounted for total costs. However, 22 percent of these respondents did not account for the salaries of their training staff. Instead, this cost was often included in tuition fees of non-Government short term and interagency courses.

Sixty-six percent of the respondents who accounted for total costs included trainee salaries and 59 percent accounted for both direct labor and trainee salaries, which together made up 80 percent of the cost of Federal employee training in fiscal year 1973.

USE OF TCM

CSC encourages, but does not require, agencies to use its TCM or other formal training cost identification systems.

About 12 percent of the respondents used TCM. Of those who did not, 37 percent did not know about it; 21 percent had a better alternative; 13 percent said it was too complicated to use; 11 percent said it did not represent their costs; and 17 percent answered "other," adding such reasons as "mandatory course," "cost only necessary to justify a new course," and "no costs other than salaries."

Some respondents had doubts about the proper use of TCM. They thought it was not suited to their training courses because the courses' subject matter was not quantifiable or measurable. Some said, "The course is required, so cost analysis is not important." Conversely 74 percent of those who used TCM did so to account for costs of required courses. Respondents who collected data on total costs, including direct labor and trainee salaries, represented 78 percent of those who used TCM.

CHAPTER 3

PLANNING, REVIEW, AND REVISION

PLANNING

FPM requires each agency to review periodically, but no less often than annually, its program to identify training needed to bring about more effective performance at the least possible cost. The program should contain comprehensive course plans which training officers are to follow.

The Subcommittee report said that:

> "* * * consideration should be given to evaluation of the training itself, including such factors as the length of the training course, the adequacy of instruction, the course content and the relationship of this content to the predetermined objectives of the training; adequacy of training facilities; and adequacy of training aids, etc.."

CSC materials suggest that a training course plan include written course objectives, the content of the course, the method of presentation, how learning is to be measured, and procedures for course modification. Training authorities also suggest that a plan specify qualifications for trainees since the principles and content of a course may be excellent but not necessarily useful to some employees.

Our questionnaire examined not only overall but also specific components of course plans, just as we examined both overall and detailed items in cost collection.

Authorities agree that a good course plan should address:

Organizational needs: The knowledge, skill, and ability requirements for maximum effectiveness of the agency operations which the course addresses.

Training objectives: The goals to be reached as a result of the course. The CSC Guide states: "Ideally, they should be stated in performance terms, i.e., some actions or behaviors which the trainee is expected to exhibit as a result of his training experience."

Curriculum or content: The specific topics or subject matter to be covered.

Programing of the course, or lesson plan, and the course material and equipment: The methodology and timing of the presentation of the subject matter (e.g., 3 hours' lecture, 1 hour of slides, 1 hour of discussion, and such necessary equipment as a slide projector, flip charts, etc.).

Trainee qualifications: The prerequisities that a trainee must have (minimum reading rates, mathematical skill, or machine familiarity, for example), designed to restrict the course to trainees who might benefit from it.

Critiques relating to specific parts of the course: Trainees' reactions to specific features of the course in the form of comments that can be tabulated and quantified as an early step in the course evaluation.

Measurement of learning: A description of how the trainee's learning will be measured both during the course and upon completion. The instruments developed for these measurements and specified in the plan are usually in the form of written performance tests or informal or formal demonstrations or discussions.

Validation and evaluation: A methodology for assessing the adequacy and suitability of the course.

Updating procedures: How to make changes on the basis of observation or performance measures and how to reexamine the original objectives to improve the course.

Ninety percent of the respondents had written training course plans; however, the individual components of a good plan were not always included, as the following table shows.

	Percent of respondents (note a)
Organizational needs	65
Training objectives	91
Curriculum or content	85
Programing of course	72
Course materials	75
Trainee qualifications	47
Critiques relating to parts of course	62
Measurement of learning during course	51
Measurement of learning upon course completion	51
Validation and evaluation	48
Updating procedures	56

[a] "Respondents" refers to the 90 percent who had written course plans.

Most plans covered the conducting of the course (i.e., the objectives, curriculum, materials and equipment, and lesson plans), but instructions for measuring course results were less often included.

Less than half the respondents had trainee qualifications in their plans. Authorities suggest that such qualifications prevent the course from being used as a "reward" or a temporary "dumping ground," which some respondents mentioned as reasons for selecting employees for training.

Over 60 percent of the respondents planned for course critiques. Although some studies show that trainees who enjoy a course are likely to benefit from it, critiques do not necessarily measure any learning that has taken place. Nevertheless, training officials said that critiques are often used because they can be easily administered.

Less than half the respondents planned for course validation and evaluation. While authorities acknowledge that the scope of this process may vary with the type of course and resources available, most agree that it should be in the overall course plan to the extent practicable.

Strengths and weaknesses of a course are discovered when it is evaluated after completion. Information gathered and a reexamination of the original objectives are used for course modification. Training officials deem it essential to the success of future courses to plan ahead for feedback and necessary changes. Only 56 percent of the respondents, however, planned for updating.

REVIEW AND REVISION

Authorities suggest that measurements of the effectiveness of training should be made at three times: during the training, upon completion of the training, and after return to the job. Sixteen percent of the respondents took no measurements, 22 percent measured performance at one of these times, 24 percent at two of these times, and 38 percent at all three times.

Performance measures during and upon completion of course

The CSC Guide stresses incourse evaluation to insure that course objectives are being met. Along with current literature on evaluating training, it describes, as shown in the following table, both direct and indirect methods to test performance during and at the end of a course.

	Direct	Indirect
Formal:	pencil and paper job or task tests	opinion questionnaires classroom observation
Informal:	class discussions role playing case studies	trainee conversations instructor "feelings"

There are limiting features to these methods; for example, (1) test construction is difficult, (2) participation in class discussions may not demonstrate actual learning, (3) opinion questionnaires may reflect personal biases, and (4) observers must be familiar with the subject matter.

The timing of the performance measures may depend upon the type of test used and such course features as length, size, material taught, and number of times the course has been given. For example, if an observer is used, his comments may be given at the end of the day; a critique may be used only at the end of the course; in a long course, pencil and paper tests may be given at the end of each unit; and task performance tests may be given daily if the next step depends upon the mastery of the previous one.

Fifty-eight percent of the respondents gave periodic performance tests during the course and 55 percent did so upon completion, as shown below.

Percent of respondents (note a)

	Pencil and paper test	Instructor rating	Task test	Other
During the course	65	46	63	[b]10
Upon completion of course	61	46	46	[b] 7

[a]"Respondents" refers to the 58 percent who took measures during the course and the 55 percent who took measures upon completion.

[b]Of those who answered "other," most used oral examinations, role playing, or peer critiques as measurements.

On-the-job performance measures

Tests during and at the completion of training courses measure learning from the course; feedback from these tests helps improve course strategy or methods. Evaluation upon return to the job tells whether and how learning is applied.

Some trainers consider assessing the trainee's job performance the most crucial phase of evaluation because it shows both the adequacy and the relevancy of the training; a trainee may master techniques and principles but be unable to use them in his daily work. Thus, an important part of the evaluation is determining the amount of transfer from the course to the on-the-job situation and how long the resulting changes last. Also important is the examination of organizational changes resulting in improved supervision, product quality, actual savings in the department or in improved morale and job satisfaction. Seventy percent of the respondents said that performance was assessed on the job after training.

Of those making this assessment, about 70 percent used supervisors' ratings and job performance measures. Forty

percent used graduate critiques and 13 percent said they used "other" techniques--primarily informal observations, discussions, and interviews with training staff.

While immediate checking upon return to a job may indicate some learning, training experts consider a later evaluation which indicates retention of learning and use in the everyday situation a more valid check. Many authorities say that the posttraining appraisal should be made after 3 months or more so that the trainees have an opportunity to practice what they have learned. Additional measures taken later can validate the findings of this appraisal.

The respondents measured on-the-job performance at different periods of time after training, as follows:

	Percent of respondents (note a)
Less than 3 months	55
3 to 6 months	37
6 to 12 months	46
After 12 months	21

[a]"Respondents" refers to the 70 percent who assessed on-the-job performance after training.

Trainers also consider accurate results important in measuring the effects of training. This means that measures should not only be taken repeatedly but also that on-the-job performance should be measured in detail. Fifty-five percent of the respondents rated the trainees' performance satisfactory or not satisfactory, and 42 percent rated performance on a graduated scale (e.g., very good, good, fair, poor, very poor, or from 0 to 100 percent). Eighty percent rated the trainees' job performance in relation to specific parts of their jobs.[1]

[1]"Percent" refers to the 70 percent who assessed on-the-job performance after training.

Course modification

Trainers consider evaluation as a starting point for course improvement. Feedback can lead to correcting weaknesses. Ninety-three percent of the respondents formally modified, or updated, their training courses for the following reasons.

	Percent of respondents (note a)
Change in current trends	69
Change in preestablished policies or procedures	64
Change in goals, operations, and/or conditions	56
Result of specific problems	56
Result of benefits	34
Result of job performance ratings	22
Change in, or appraisal of, performance	21
Result of course pretesting	12
All others (primarily student and/or instructor critiques and evaluations)	12

[a] "Respondents" refers to the 93 percent who modified their courses.

The CSC Guide suggests that data on trainee achievement be collected continuously and systematically and followed by appropriate course modification.

Less than a quarter of the analyzed training courses, however, were modified as a result of a trainee's subsequent on-the-job performance. This could be expected when, as previously noted, only half the training course plans

provided updating procedures and less than 60 percent of the respondents measured effectiveness during or upon completion of the course.

Respondents said that some courses were changed to keep the trainees interested. If a course was popular, its existence was guaranteed whether or not the trainees actually needed it. This also kept the training budget and staff growing.

CHAPTER 4

EVALUATION TECHNIQUES

STATISTICAL AND EXPERIMENTAL APPROACHES

Reliable and rigorous evaluative research designs which can be applied to training have been developed. The ideal methodology requires measuring change from before training to after; identifying to the extent possible cause and effect; and using statistically equivalent, randomly selected experimental and control groups. When random selection is not possible, equivalent results can be obtained by giving precourse testing to two groups to determine the differences between them and then training one group and using the other as a control group. If using a control group is not possible, a series of precourse and postcourse tests may be administered and compared to determine the influence the training had on performance.

Nineteen percent of the respondents used statistical or experimental methods to evaluate the effectiveness of their training courses. Of these, over half (55 percent) used the pretest and posttest method without a control group. Training officials and evaluation experts report that this method is weaker than methods using control groups. The following table shows the various techniques used by the 19 percent.

	Percent of respondents (note a)
Compare the job performance of a large (100-500), random, nonbiased sample of graduates with a similar sample of workers who have not received training but who have been on the job as long as the graduates.	8
Compare the on-the-job performance of a small sample of graduates (less than 50) with the on-the-job performance of a similar sample of workers who have not had recent training but who have been on the job as long as the graduates	12
Compare the on-the-job performance of a representative group of graduates with the performance of a matched, or nonbiased, randomly selected control group after both groups have been working on the job the same length of time. (A control group is a group of employees similar to the group trained with respect to relevant personal characteristics or attributes that affect job performance, except that they do not receive training.)	6
Administer a pretest and a posttest to compare the job performance of a group of people before training with their job performances after training (no control groups are used).	55
Administer a pretest and a posttest to both a training group and a control group (job performance scores are taken on both groups before training and again after training).	7
Other--an analysis of the "other" techniques indicates that these respondents considered post course questionnaires, supervisors' reports on trainees, interviews with graduates, and similar measurements as statistical or experimental techniques. These procedures are not considered such by most training experts.	31

[a]"Respondents" refers to the 19 percent who used statistical techniques.

ANALYSIS OF BENEFITS

FPM suggests that, wherever feasible, an agency make cost-benefit analyses to determine how available resources can best serve the agency. Many factors influence how indepth the analysis should be. Some course criteria mentioned in CSC's Guide are (1) the content (can the benefits be measured with any precision?), (2) the learning level (skill training may require a more thorough evaluation than an orientation course), and (3) the costs. The Guide suggests that the more costly the course, the more comprehensive the evaluation ought to be. Two other factors discussed in the Guide are:

(1) The degree of control exercised by the agency over course delivery: where this control covers all elements--media, facilities and, in particular, the instruction staff--the level of evaluation may be set based on consideration of the above variables. However, where it is desirable to use frequent guest faculty to present the program, control over the delivery stage will be limited. As a consequence, it will be more difficult to apply achievement measures.

(2) The resources available to the agency: a full scale evaluation plan represents considerable time, money and professional competency on the part of the training personnel involved. Since increased reliability comes at a high price, it must be decided what point on the continuum constitutes an acceptable trade off between cost and reliability. This decision making is further complicated because it does not normally involve only a single course, but rather every internally developed course, making up the agency's training program.

To help agencies evaluate training, the CSC Bureau of Training developed Training Value Model I (TVM I), the first in a planned series of models. According to the Bureau, TVM I:

"* * * relates specifically to training designed to improve performance of those work activities that result in measurable products or services. Initial estimates suggest that the model has potential for application to the daily activities of nearly one million Federal employees. Utilization of this process will enable management to assess whether training would significantly improve employee efficiency. Faced with a choice of

several training alternatives, the model will also provide the manager with necessary information for selecting that training which is potentially most effective."

Because TVM I was developed only recently, our questionnaire did not ask if it was used. We did ask if the training benefits were analyzed and to what extent. Forty-seven percent analyzed benefits, using the procedures which follow.

	Percent of respondents (note a)
Identify benefits	87
Measure results	44
Measure benefits	28
Measure dollar value	10
Cost-benefit ratio	5

[a]"Respondents" refers to the 47 percent who analyzed benefits.

CHAPTER 5

PROBLEMS WITH TRAINING

GENERAL PROBLEMS

Almost 60 percent of the respondents had problems with training. Over half said they had insufficient resources. Many commented that additional resources would allow more sophisticated course evaluation which, in turn, would make courses more effective. Lack of resources was usually traced to lack of management interest. This appraisal is confirmed in the 1973 CSC report, "Disincentives to Effective Employee Training and Development," where the first disincentive cited is, "The benefits of training are not clear to top management." The report goes on to state that:

> "This is especially a problem because of the lack of methods which currently exist to demonstrate potential benefits to managers. Without means to determine training and development benefits, top management is likely to concentrate its resources in areas where the returns are more evident."

Respondents cited the following problems.

	Percent of respondents (note a)
Insufficient resources	56
Results cannot be determined	37
Line management fails to allow what was taught to be used on the job	31
Productivity cannot be related to training	25
Training reports too low in organization	14
Peer-group pressure counters what was learned	12
Other (these responses dealt primarily with trainee selection and a lack of support by managers and supervisors)	22

[a]"Respondents" refers to the 60 percent who had problems with training.

Respondents' comments indicated that problems with training programs were widespread among departments, regardless of the size or scope of the training officers' responsibilities. The problems generally related to selection processes, management support, and evaluation techniques.

Some respondents reported that training courses are required but may not be needed by the trainees. Many said that training was too often used as a reward or punishment for employees. One respondent said, "training is used as a sop to young professionals who have been given unchallenging, unrewarding jobs. Promise them a master's degree and they'll stay." Typical comments were: "training for training's sake with little or no regard for possible benefits;" "people who actually need training may not get it;" "some managers see the need for training only when there is nothing else to do;" and "a panacea for organizational ills." Other respondents stressed that emphasis was on education, not on-the-job performance.

Frequently cited was a conflict between a trainee's job goals and those of the training course. When the trainee returns to the job, certain obstacles which discourage the conversion of learning to on-the-job performance may occur; supervisors and peers often resist new methods and dissuade the trainee from using them. One respondent indicated that if the trainee's supervisor has not had the same training and does not want to change his ways, the trainee is likely to be frustrated in applying his new knowledge and skills on the job. Some respondents recommended that managers and supervisors play a larger role in planning and coordinating training with on-the-job goals. Many respondents felt that if the managers' and peers' attitudes could not be changed, training might be useless.

EVALUATION PROBLEMS

Thirty-nine percent of the respondents were dissatisfied with the level of evaluations. Of these, 75 percent lacked resources and 22 percent lacked statistical and experimental know-how. Thirty-nine percent gave additional reasons such as: "no real follow-up encouraged," "lack of management support," or "apathy from trainees and field line supervisors." Others reported that the course planning was too vague for evaluation. (See ch. 3.)

Many respondents said that few, if any, methods were available to evaluate the impact of nontechnical courses because it is impossible to measure quality. Many urged that a standard evaluation procedure be developed.

Many respondents wrote that they were interested in improving their evaluations but were restricted to only the most rudimentary techniques by a lack of resources. Some assumed that if there was no request for detailed and extensive evaluations, staff time and effort spent in making them would be wasted. Some questioned whether extensive evaluations would be used. A final observation reflected the views of many: "In training, the concern is to be able to show that something has been done, not that something effective has been done."

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Our questionnaire results show that the evaluation requirements of GETA, Executive Order 11348, and the recommendations of the Subcommittee report of 1967 are not being met adequately.

The extent and degree to which training cost data was collected varied widely. While most respondents collected some data, a number were not doing so to the extent considered necessary by training authorities for effective cost control; for example, some did not even identify the two largest elements of training cost--trainee and training staff salaries.

The very slight use made of CSC's TCM is surprising since TCM is discussed in CSC's fiscal year 1972 annual report and "Employee Training in Federal Service FY 1972." Its use is also suggested in the FPM, and CSC has publicized TCM and conducts training in its use.

Although almost all respondents reported that they had written training course plans, the plans often lacked the specific features necessary for future course evaluation. Strengths in the plans were in areas of course delivery--objectives, curriculum, materials, and lesson plans. Weaknesses were in areas of greatest consequence to course evaluation and modification--trainee qualifications; measurement of learning during and upon completion of the course; and validation, evaluation, and updating procedures.

Some performance measures were taken during the course, some upon its completion, and some after the trainee's return to the job but the extent, the detail, the timing, and the scope of the measures used varied widely. In many cases the use of these measures was so limited that effective evaluation would have been impossible. While training authorities say it may be possible to assess the effectiveness of a course by using a trainee critique or asking the trainees if they liked the course (and only slightly over half the respondents did this), they also say that evaluation of this type is generally inadequate to determine how the course needs to be modified.

Assessing the on-the-job performance of the trainee is probably the most crucial step in evaluation because it demonstrates course adequacy and relevancy. To make satisfactory measurement of the on-the-job-performance change possible, course objectives must be clearly planned and specified. Unless and until on-the-job effectiveness is measured against course objectives and courses are then modified accordingly, the benefits of particular courses and, in turn, effective management of training may be questioned.

Statistical and experimental evaluations are not widely conducted; those that are done are elementary. However, over 60 percent of the respondents said that they were satisfied with the level of evaluations being performed. TVM I could be helpful if TCM were used more or if data on the course costs upon which TVM I depends were collected more thoroughly.

Few, if any, Government agencies have sufficient resources to fund all needed training. Therefore, justifying the value of courses by citing on-the-job improvements is crucial to efficient and effective Government manpower management.

RECOMMENDATIONS

The Chairman CSC, should:

--Work with Federal departments and agencies on the findings and problems identified in this report.

--Follow up to determine steps taken by the departments and agencies for improvement.

--Reemphasize that it is the departments' and agencies' primary responsibility to control and evaluate training for their employees.

--Monitor the evaluation of training in the departments and agencies and promote successful methods of evaluation.

Specific actions of CSC should include:

--Defining and achieving a consensus among the Executive departments and agencies on elements that make up the total cost of training and then insuring that data on these elements is uniformly determined and collected.

--Determining why TCM has been little used, amending and refining it accordingly, and then increasing efforts to publicize TCM to training officials at all levels.

--Helping the departments and agencies develop written course plans which include instructions for course delivery, measuring results, and modifying and updating the course.

MATTERS FOR CONSIDERATION BY THE CONGRESS

This report should help the Congress assess how well CSC and the departments and agencies are fulfilling the evaluation requirements of GETA, Executive Order 11348, and the recommendations of the Subcommittee report of 1967.

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APPENDIX I

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'-74'

TRAINING EVALUATION SURVEY PREPARED BY USGAO

INSTRUCTIONS

Fill out this questionnaire for one course for which you are responsible. Choose the one that receives the most effective evaluation.
If other people have more knowledge of a specific area, please ask for their assistance.
Correspondence, Civil Service Commission and non-government long term courses are excluded from this survey.

RESPONDENT INFORMATION

NAME OF RESPONDENT | TELEPHONE

POSITION AND JOB CLASSIFICATION SERIES

DEPARTMENT | AGENCY

ADDRESS | CITY AND STATE | ZIP CODE

THE NUMBER OF COURSES IN EACH OF THE FOLLOWING CATEGORIES FOR WHICH YOU ARE RESPONSIBLE DURING FISCAL YEAR 1974.

☐ NO. OF PROFESSIONAL COURSES (MEDICAL, SCIENTIFIC, LEGAL & RELATED)
☐ NO. OF TECHNICAL COURSES
☐ NO. OF ADMINISTRATIVE, MANAGEMENT & SUPERVISION COURSES
☐ NO. OF OTHER COURSES (CLERICAL, ETC.)

DESCRIPTION OF COURSE SELECTED FOR QUESTIONNAIRE RESPONSE

NAME OF COURSE

APPROXIMATE COURSE DURATION_____(DAYS) APPROXIMATE NUMBER OF ENROLLEES PER FISCAL YEAR_____

CATEGORY OF COURSE: *(Check One)*

☐ PROFESSIONAL (MEDICAL, SCIENTIFIC, LEGAL & RELATED)
☐ TECHNICAL
☐ ADMINISTRATIVE, MANAGEMENT & SUPERVISION
☐ OTHER (CLERICAL, ETC.)

SPONSOR OF THE COURSE

☐ AGENCY ☐ INTERAGENCY ☐ NON-GOVERNMENT SHORT-TERM

THE NUMBER OF COURSES IN EACH OF THE FOLLOWING CATEGORIES FOR WHICH YOU DO AN EVALUATION SIMILAR TO THAT OF THE COURSE SELECTED FOR THIS QUESTIONNAIRE.

___ NO. OF PROFESSIONAL COURSES (MEDICAL, SCIENTIFIC, LEGAL & RELATED)
___ NO. OF TECHNICAL COURSES
___ NO. OF ADMINISTRATIVE, MANAGEMENT & SUPERVISION COURSES
___ NO. OF OTHER (CLERICAL, ETC.) COURSES

PURPOSE

1. WHAT IS THE PURPOSE OF THE COURSE? *(Check One or more)*

☐ MEET ORGANIZATIONAL GOALS
☐ INCREASE PROFICIENCY
☐ PERSONAL DEVELOPMENT
☐ IMPROVE HUMAN RELATIONS
☐ SAFETY
☐ ORIENTATION
☐ PROVIDE JOB ENTRY SKILL, APTITUDE, OR EDUCATION REQUIREMENTS
☐ OTHER *(Please Specify)* _____

SCOPE

2. FOR WHAT OCCUPATIONAL GROUP IS THE COURSE GIVEN? *(Check One or more)*

☐ PROFESSIONAL (ACCOUNTANTS, ENGINEERS, DOCTORS, ETC.)
☐ PARA-PROFESSIONALS AND TECHNICIANS (NURSES' AIDS, LABORATORY TECH., ETC.)
☐ MANAGERS OR ADMINISTRATORS
☐ CLERICAL AND OFFICE WORKERS
☐ SKILLED TRADES, OPERATORS, SERVICEWORKERS AND LABORERS

3. ARE EMPLOYEES AT A SPECIFIC OCCUPATIONAL LEVEL REQUIRED TO TAKE THIS COURSE?

☐ YES ☐ NO

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4. DO YOU MAKE THE FOLLOWING TYPES OF MANPOWER ESTIMATES?

☐ YES ☐ NO THE NUMBER OF MANDAYS REQUIRED BY THE STAFF TO PREPARE THE COURSE

☐ YES ☐ NO THE NUMBER OF MANDAYS REQUIRED BY THE STAFF TO ADMINISTER AND TEACH THE COURSE PER FISCAL YEAR

5. IS AN ACCOUNTING MADE OF THE COURSE COSTS?

☐ YES ☐ NO

If No, go to 7.

6. IF YES, ARE THE FOLLOWING COSTS DETERMINED FOR THE COURSE?

☐ YES ☐ NO TOTAL DIRECT LABOR COSTS FOR THE STAFF PERSONNEL ASSOCIATED WITH THIS TRAINING COURSE

☐ YES ☐ NO TUITION AND RELATED FEE COSTS

☐ YES ☐ NO OTHER EXPENDITURES (BOOKS AND MATERIALS, CONTRACTORS, RENTALS, & RELATED COSTS).

☐ YES ☐ NO THE TRAINEE SALARY COSTS

☐ YES ☐ NO TRAVEL AND PER DIEM

☐ YES ☐ NO TOTAL COSTS

7. IS THE CIVIL SERVICE TRAINING COST MODEL, ISSUED IN FEBRUARY 1972, USED FOR THIS COURSE? *If Yes, go to 9.* ☐ YES ☐ NO

8. IF NO, WHY NOT? ☐ DIDN'T KNOW ABOUT MODEL ☐ BETTER ALTERNATIVE ☐ TOO COMPLICATED TO USE ☐ NOT REPRESENTATIVE OF COSTS ☐ OTHER *(Please Specify)* _____

PLANNING, REVIEW & REVISION

9. DO YOU HAVE A COURSE TRAINING PLAN SPECIFIED IN WRITING? ☐ YES ☐ NO *If No, go to 11.*

10. IF YES, WHICH OF THE FOLLOWING FEATURES OF THE TRAINING PLAN ARE CLEARLY SPECIFIED?

☐ ORGANIZATIONAL NEEDS
☐ TRAINING OBJECTIVES
☐ THE CURRICULA OR CONTENT
☐ THE PROGRAMMING OF THE COURSE OR THE LESSON PLANS
☐ TRAINING MATERIAL & EQUIPMENT
☐ TRAINEE QUALIFICATIONS
☐ MEASUREMENT OF LEARNING DURING THE COURSE
☐ MEASUREMENT OF SUCCESSFUL COURSE COMPLETION
☐ VALIDATION & EVALUATION (EVALUATES THE WORTH OF THE TRAINING)
☐ UPDATING PROCEDURES (CHANGES, BASED ON OBSERVATION OR PERFORMANCE MEASURE, MADE TO IMPROVE THE PROGRAM)
☐ CRITIQUES STRUCTURED TO RELATE TO SPECIFIC PARTS OF THE TRAINING COURSE

11. ARE PERIODIC PERFORMANCE TESTS GIVEN DURING THE COURSE? ☐ YES ☐ NO *If No, go to 13.*

12. IF YES, WHAT TYPE OF TESTS ARE GIVEN? *(Check all that apply)*

☐ PAPER AND PENCIL ACHIEVEMENT TEST
☐ JOB OR TASK PERFORMANCE TESTS
☐ INSTRUCTOR'S RATINGS
☐ OTHER *(Please Specify)* _____

13. IS A PERFORMANCE MEASURE OR TEST GIVEN AT THE COMPLETION OF THE TRAINING COURSE?

☐ YES ☐ NO *If No, go to 15.*

14. IF YES, WHAT TYPE? *(Check all that apply)*

☐ PAPER-PENCIL ACHIEVEMENT TEST
☐ JOB OR TASK PERFORMANCE TEST?
☐ INSTRUCTOR RATINGS
☐ OTHER *(Please Specify)* _____

15. IS THE JOB PERFORMANCE OF THE TRAINING GRADUATE ASSESSED AFTER RETURN TO THE JOB?

☐ YES ☐ NO *If No, go to 20.*

16. IF YES, WHAT MEASURES ARE TAKEN? *(Check all that apply)*

☐ JOB PERFORMANCE
☐ SUPERVISOR RATING
☐ TRAINING GRADUATE'S CRITIQUE
☐ OTHER *(Please Specify)* _____

APPENDIX I

12. HOW LONG AFTER GRADUATION ARE THESE MEASURES TAKEN? *(Check more than one if measurement is taken at different times)*

- ☐ LESS THAN THREE MONTHS
- ☐ FROM 3 TO LESS THAN 6 MONTHS
- ☐ FROM 6 TO LESS THAN 12 MONTHS
- ☐ AFTER 12 MONTHS

18. HOW DETAILED IS THIS JOB PERFORMANCE MEASURE? *(Check One)*

- ☐ THE GRADUATE'S JOB PERFORMANCE IS RATED SATISFACTORY OR NOT SATISFACTORY
- ☐ THE GRADUATE'S JOB PERFORMANCE IS RATED ON A DETAILED SCALE (E.G., VERY GOOD, GOOD, FAIR, POOR, VERY POOR OR FROM 0 TO 100 PERCENT, ETC.)

19. IS THE GRADUATE'S JOB PERFORMANCE MEASURE RELATED TO SPECIFIC PARTS OF HIS JOB? ☐ YES ☐ NO

20. IS THE TRAINING COURSE FORMALLY MODIFIED OR UPDATED? *If No, go to 22.* ☐ YES ☐ NO

21. IF YES, FOR WHAT REASONS?

- ☐ A CHANGE IN CURRENT TRENDS
- ☐ A CHANGE IN PREESTABLISHED PROCEDURES OR POLICIES
- ☐ A CHANGE IN GOALS/ OPERATIONS/OR CONDITIONS
- ☐ A CHANGE IN OR AN APPRAISAL OF PERFORMANCE
- ☐ A RESULT OF SPECIFIC PROBLEMS
- ☐ A RESULT OF COURSE PRE-TESTING
- ☐ A RESULT OF JOB PERFORMANCE RATINGS
- ☐ A RESULT OF BENEFITS OF TRAINING
- ☐ OTHER *(Please Specify)* _____

EVALUATION TECHNIQUES

22. ARE STATISTICAL OR EXPERIMENTAL METHODS USED TO EVALUATE THE EFFECTIVENESS OF THE TRAINING COURSE? ☐ YES ☐ NO *If No, go to 24.*

23. IF YES, WHICH OF THE FOLLOWING PROCEDURES ARE USED? *(Check all that apply)*

- ☐ COMPARE THE JOB PERFORMANCE OF A LARGE (100-500) RANDOM NONBIASED SAMPLE OF GRADUATES WITH A SIMILAR SAMPLE OF WORKERS WHO HAVE NOT RECEIVED TRAINING, BUT WHO HAVE BEEN ON THE JOB AS LONG AS THE GRADUATES.
- ☐ COMPARE THE ON-THE-JOB PERFORMANCE OF A SMALL SAMPLE OF GRADUATES (LESS THAN 80 CASES) WITH ON-THE-JOB PERFORMANCE OF A SIMILAR SAMPLE OF WORKERS WHO HAVE NOT HAD RECENT TRAINING, BUT WHO HAVE BEEN ON THE JOB AS LONG AS THE GRADUATES.
- ☐ COMPARE THE ON-THE-JOB PERFORMANCE OF A REPRESENTATIVE GROUP OF GRADUATES WITH THE PERFORMANCE OF A MATCHED OR NONBIASED RANDOMLY SELECTED CONTROL GROUP AFTER BOTH GROUPS HAVE BEEN WORKING ON THE JOB THE SAME LENGTH OF TIME. (A CONTROL GROUP IS A GROUP OF EMPLOYEES SIMILAR TO THE GROUP TRAINED WITH RESPECT TO RELEVANT PERSONAL CHARACTERISTICS OR ATTRIBUTES THAT AFFECT JOB PERFORMANCE, EXCEPT THAT THEY DO NOT RECEIVE TRAINING.)
- ☐ A PRE AND POST TEST THAT COMPARES THE JOB PERFORMANCE OF A GROUP OF PEOPLE BEFORE TRAINING WITH THEIR JOB PERFORMANCES AFTER TRAINING (NO CONTROL GROUPS ARE USED).
- ☐ A PRE AND POST TEST WITH A CONTROL GROUP (JOB PERFORMANCE SCORES ARE TAKEN ON BOTH THE TRAINEE AND THE CONTROL GROUP BEFORE TRAINING AND AGAIN AFTER TRAINING.)
- ☐ OTHER *(Please Specify)* _____

24. ARE THE BENEFITS THAT RESULT FROM THE COURSE ANALYZED?

☐ YES ☐ NO *If No, go to 26.*

25. IF YES, IN WHAT DETAIL? *(Check all that apply)*

- ☐ IDENTIFY THE BENEFITS
- ☐ MEASURE THE BENEFITS
- ☐ MEASURE THE RESULTS OF THE BENEFITS
- ☐ MEASURE THE DOLLAR VALUE OF THE BENEFITS
- ☐ MEASURE THE COST BENEFIT RATIO

26. ARE YOU DISSATISFIED WITH THE LEVEL OF EVALUATIONS BEING PERFORMED?

☐ YES ☐ NO *If No, go to 28.*

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27. IF YES, FOR WHAT REASONS? *(Check all that apply)*

- ☐ DO NOT THINK IT NECESSARY TO EVALUATE TRAINING BEYOND CRITIQUES
- ☐ WOULD RATHER INVEST RESOURCES IN ADDITIONAL TRAINING COURSES
- ☐ LACK OF STATISTICAL AND EXPERIMENTAL KNOW HOW
- ☐ LACK OF RESOURCES TO CARRY OUT EVALUATIONS
- ☐ OTHER *(Explain)* _____

28. IF YOUR ORGANIZATION IS DEVELOPING A SYSTEM TO EVALUATE TRAINING, PLEASE DESCRIBE

29. WHY DOES THIS COURSE RECEIVE YOUR MOST EFFECTIVE EVALUATION?

- ☐ NEW COURSE
- ☐ SIGNIFICANT TO AGENCY MISSION
- ☐ MANAGEMENT INTEREST
- ☐ OTHER *(Please Specify)* _____

PROBLEMS WITH TRAINING

30. DO YOU HAVE PROBLEMS WITH TRAINING?

☐ YES ☐ NO *If No, go to 32.*

31. IF YES, WHAT ARE YOUR PROBLEMS? *(Check All that apply)*

- ☐ TRAINING REPORTS TOO LOW IN THE ORGANIZATION
- ☐ PEER GROUP PRESSURE COUNTERS WHAT WAS LEARNED
- ☐ CHANGES IN PRODUCTIVITY CANNOT BE RELATED TO TRAINING
- ☐ LINE MANAGEMENT FAILS TO ALLOW WHAT WAS TAUGHT TO BE USED ON-THE-JOB
- ☐ RESULTS OF TRAINING CANNOT BE DETERMINED
- ☐ INSUFFICIENT RESOURCES
- ☐ OTHER *(Please Specify)* _____

ADDITIONAL COMMENTS

32. IF YOU HAVE ADDITIONAL COMMENTS ON ANY OF THE ITEMS WITHIN THE QUESTIONNAIRE OR TOPICS NOT COVERED, PLEASE EXPRESS YOUR VIEWS IN THE SPACE BELOW. YOUR ANSWERS AND COMMENTS ARE GREATLY APPRECIATED.

APPENDIX II

SAMPLING METHODOLOGY

SAMPLE SELECTION BY DEPARTMENT

Executive department training officers gave us lists of their agency training officers, who in turn gave us lists of their training and development officers. We sent questionnaires to 881 of these officers, randomly selected, by department, from the total of 1,606, which was a number sufficient to yield returns with an error rate of 10 percent or less at a 95-percent confidence level.

SELECTION OF OVERALL SAMPLE

To obtain valid statistics for all departments combined, the responses were randomly thinned so that each department was represented in the overall sample in the same proportion as its total number of training personnel to all training personnel in the executive departments. (For example, if Department A had 160 training personnel, representing 10 percent of the total of 1,606, then 10 percent of the overall sample was randomly selected from all questionnaires returned from Department A.) We included 290 questionnaires in the overall sample analysis.

RETURN RATE

Of the 881 questionnaires sent, 205 were returned by personnel who were not legitimate members of the sample population because they were not responsible for conducting training or did not conduct the type of course about which we asked them to reply. To be conservative, we took the worst-case position and assumed that the remaining 676 questionnaires were received by training officers who conducted training courses of interest to the survey and were therefore legitimate members of the sample population. Five hundred and seventy-one, or 84 percent, of these assumed-to-be-legitimate sample population members returned the questionnaire. The response rate would have been much higher, of course, if we had not assumed that all the nonrespondents were legitimate population members. No followup studies were conducted on the 16 percent of the population presumed to be nonrespondents since the risk of substantially biasing the survey results by failing to include such a small proportion of the population is low.

APPENDIX III

STATISTICAL METHODOLOGY

The results of the various system analyses were percentages, or proportions, of replies to a specific question. When two proportions differed, a statistical test was sometimes necessary to determine whether the difference was statistically significant. Looking merely at the proportion difference is not statistically complete. Among other factors, the size of the sample is relevant to determining significance. To obtain a statistical measure, we chose the Z test, which tests hypotheses concerning several proportions.[1]

FORMULA:

$$z = \frac{\frac{x_1}{n_1} - \frac{x_2}{n_2}}{\sqrt{p(1-p)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

$$p = \frac{x_1 + x_2}{n_1 + n_2}, \quad P_1 = \frac{x_1}{n_1}, \quad P_2 = \frac{x_2}{n_2}$$

P_1 = the proportion of a population answering a particular question(s).

P_2 = the proportion of a population answering the same particular question(s).

[1] Irwin Miller and J. E. Freund, "Probability and Statistics for Engineers" (Prentice Hall Inc., Englewood Cliffs, New Jersey, 1965), pp. 193-195.

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